

# WHAT IS CLAIMED IS:

1. A system of manufacturing a semiconductor integrated circuit, comprising a data-managing center having a database, a designing center, and a manufacturing center which are arranged on the side of a semiconductor manufacturer, and which are connected with a client via the Internet, wherein each of said centers uses information contained in the databases of the data-managing center, performs two-way communication with said client, and thereby progresses the production of the semiconductor integrated circuit.

2. A system of manufacturing a semiconductor integrated circuit, comprising:

a data-managing center comprising: a cost/number-of-days database containing data representing courses for manufacturing the semiconductor integrated circuit, each of which has attributes of costs and the number of days in fields of product types and urgency degrees of the semiconductor integrated circuit; a reservation status database containing data of an acceptable reservation quantity in fields of the product types and the urgency degrees of the semiconductor integrated circuit and in fields of chip-completion dates; and a design/manufacture status database containing data representing statuses of ordering, releasing, designing, and manufacturing in fields of a client; said data-managing center communicating with said client to thereby perform data management;

a designing center communicating with said client and performing designing of the semiconductor integrated circuit on the basis of release data from said client, to output layout data as a product of the designing;

a manufacturing center which performs manufacturing of the semiconductor integrated circuit according to manufacture data that is released from one of said designing center and said client and that is

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intended for use in the manufacturing; wherein:

said data-managing center, said designing center, and said manufacturing center are connected together via the Internet; and

each of said centers uses information contained in said databases of said data-managing center, performs two-way communication with said client, and thereby progresses the production of the semiconductor integrated circuit.

3. A system of manufacturing a semiconductor integrated circuit, comprising:

a data-managing center comprising: a cost/number-of-days database containing data representing courses for manufacturing the semiconductor integrated circuit, each of which has attributes of costs and the number of days in fields of product types and urgency degrees of the semiconductor integrated circuit; a reservation status database containing data of an acceptable reservation quantity in fields of the product types and the urgency degrees of the semiconductor integrated circuit and in fields of chip-completion dates; a design/manufacture status database containing data representing statuses of ordering, releasing, designing, and manufacturing in fields of a client, said data-managing center communicating with said client to thereby perform data management;

a plurality of designing centers each of which closely communicates with said client and performs designing of the semiconductor integrated circuit according to release data provided from said client, so as to outputs layout data as a product of the designing; and

a plurality of manufacturing centers each of which performs manufacturing of the semiconductor integrated circuit according to manufacture data that is released from one said designing center and said client and that is intended for use in the manufacturing; wherein:

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said data-managing center, said designing centers, and said manufacturing centers are connected together via the Internet; and each of said centers uses information contained in said databases of said data-managing center, performs two-way communication with said client, and thereby progresses the production of the semiconductor integrated circuit.

4. A system of manufacturing a semiconductor integrated circuit as claimed in claim 3, wherein said data-managing center performs referential access to said reservation status database and design/manufacture status database to thereby increase or decrease the number of one of said designing center and said manufacturing center.

5. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein:

the client selects one of three order modes which are a design-and-manufacture order mode, a design-only order mode, and a manufacture-only order mode; and

said data-managing center uses relative information contained in said databases in correspondence with the selected order mode.

6. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center performs referential access to said cost/number-of-days database and said reservation status database to thereby accept reservation requested by said client.

7. A system of manufacturing a semiconductor integrated circuit as claimed in claim 1, wherein said designing center and said manufacturing center report work progress status information to said data-managing center, voluntarily or in response to inquiry received from said data-managing center.

8. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said designing center sends said layout data to

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said client so that the client can verify the layout data.

9. A system of manufacturing a semiconductor integrated circuit as claimed in claim 8, wherein said client checks said layout data repeatedly sent by said designing center until complete layout data is produced.

10. A system of manufacturing a semiconductor integrated circuit as claimed in claim 8, wherein said data-managing center reconsiders costs and the number of days in a corresponding order, on the basis of the verification of the layout data on said client.

11. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center performs referential access to said reservation status database and said design/manufacture status database to thereby reconsider acceptable reservation quantities, designing resources, and manufacturing resources.

12. A system of manufacturing a semiconductor integrated circuit as claimed in claim 3, wherein said manufacture data output from said designing center is sent through said data-managing center to said manufacturing center selected by said data-managing center or directly to a predetermined one of said manufacturing centers.

13. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein: one of said designing center and said data-managing center comprises a design data file for retaining release data provided from said client; and one of said manufacturing center and said data-managing center comprises a manufacture data file for retaining said manufacture data provided from one of said designing center and said client; so that said client need not resend said release data.

14. A system of manufacturing a semiconductor integrated circuit as claimed in claim 13, wherein: a mirrored line connects said Internet to each of said centers; and a mirrored line connects said data-managing center to each of said databases, said design data file, and said manufacture data file.

15. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, further comprising a mirror server which has databases identical to said cost/number-of-days database, said reservation status database, and said design/manufacture status database, and which is also connected to said Internet and performs the same operation as that of said data-managing center.

16. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein:

said client is connected to each of said databases via a virtual private network; and

when said client performs access to each of said databases, connection authentication for the access is performed according to one of ID information allocated to said client, information specific to a machine of said client, and information on a tool license of said client.

17. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center further comprises a cancellation database containing data representing a cancellation charge for reservation for the manufacture of the semiconductor integrated circuit in fields of the product types and the urgency degrees.

18. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center further comprises a center-operation-status database containing, in fields of said designing center and said manufacturing center, data of the number of resources and an operation ratio which represent a past-current operation experience and a future operation prospect; the data-managing center allocating appropriate one of said designing centers and appropriate one of said manufacturing centers according to current or future operation conditions; the data-managing center increasing or reducing the acceptable reservation quantity.

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19. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center further comprises a center-operation-status database containing, in fields of said designing center and said manufacturing center, data of the number of resources and an operation ratio which represent a past-current operation experience and a future operation prospect; the data-managing center issuing an instruction for incorporation of manufacture data of a plurality of products to embody the manufacture data of the products on one wafer in accordance with current or future operation conditions.

20. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center further comprises a per-client design/manufacture historical-log database containing current and past design/manufacture statuses which include design/manufacture order quantities, the number of redesign occurrences, and a reservation-cancellation ratio, in fields of the clients and the product types; the data-managing center offering deduction for designing/manufacturing; the data-managing center increasing or reducing a redesign insurance premium, a cancellation charge, and a cancellation-insurance premium; the data-managing center restricting reservations and course selection according to the data.

21. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center further comprises an insurance-premium database containing data representing an insurance premium and a cancellation-insurance premium in fields of the product types and the urgency degrees, and makes a redesign fee and the cancellation charge to be free within predetermined times, or offers deduction thereof.

22. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center further comprises a

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revision-management database containing data representing design data parameters and design know-how of said design center in fields of the clients, the product types, and revisions, said design data parameters being extracted from layout data output from said designing center, so that a revision is automatically returned to a previous version when a defect is caused in a product and is used by said revision-management database to estimate the performance and the area of a product.

23. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein said data-managing center further comprises a developing-tool-revision-management database to thereby manage developing tools on the sides of said client and said semiconductor manufacturer to be the same.

24. A system of manufacturing a semiconductor integrated circuit as claimed in claim 18, wherein, based on requirements input by said client for price, delivery time, performance, and chip size, said data-managing center refers to specifications of each product type, the information contained in said cost/number-of-days database, said reservation status database, and said center-operation-status database, totally examines the requirements, estimates an optimal product type and course, and submit the result to said client.

25. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, further comprising a CAD center for providing an environment for using developing tools and commercially available tools to said client.

26. A system of manufacturing a semiconductor integrated circuit as claimed in claim 2, wherein:

said designing center performs automatic execution of steps up to creation of back annotation data, said designing center automatically transmitting the created back annotation data to said client via said data-

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managing center, said designing center notifying completion in the creation of the back annotation data to said client, said designing center automatically generating mask data, said designing center verifying artwork data when an acceptance notification for the back annotation data is received as an inspection result from said client, said designing center automatically transmitting the generated mask data and test patterns to said manufacturing center.

27. A system of manufacturing a semiconductor integrated circuit as claimed in claim 1, wherein said semiconductor integrated circuit is an application-specific integrated circuit (ASIC).